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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/443,460 11/19/99 KOBAYASHI

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EXAMINER

FISCHER, J

ART UNIT

PAPER NUMBER

1733

DATE MAILED:

04/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/443,460

Applicant(s)

KOBAYASHI ET AL.

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It appears from the specification that this tire design is specific to a runflat tire. However, it is unclear whether the claims are directed toward a tire designed for runflat operation. The depiction of the rubber reinforcing layer as extending from a position near to the bead core in the bead portion to a position near to the end of the tread portion does not independently define the function of the tire. Furthermore, the claims lack a suggestion as to the properties of the elastomeric materials used to construct the rubber reinforcing layer. The use of such language would add clarification to the rubber reinforcing layer as being specific to a runflat tire design. To clarify and more clearly define the claimed invention, it is the examiner's suggestion to include the word --runflat-- before the word "pneumatic" in line 1 of each of the eight claims.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 rejected under 35 U.S.C. 102(b) as being anticipated by Deck et al. (US 4,287,924). Deck et al. teach the manufacture of a safety tire that contains the following design: a radial carcass, comprised of one or more layers of flexible cords, extending between a pair of bead cores, a belt arranged at an outer peripheral surface of the carcass, a crescent-shaped rubber reinforcing layer arranged at an inner surface side of an innermost carcass ply, and a soft, rubber protection sheet that is disposed between the rubber reinforcing layer and the nearest carcass ply (Column 1, Lines 22-30).

It should be initially noted that the reference does not specifically recognize the tire as a "runflat tire"; however, the reference does suggest that the invention relates to safety tires that comprise self-supporting sidewalls which allow said vehicles to continue to roll normally or almost normally after a puncture (Column 1, Lines 6-10).

With respect to claim 2, it can be seen from Figure 1 that the single ply of the carcass is a turnup ply wound around the bead core from an inside of the tire toward an outside thereof and consists of a toroidally extending main body and a turnup portion.

Regarding claim 3, it can be seen from Figure 1 that the rubber protection sheet is existent over both sides of a straight line drawn from a curvature center of a flange at an inclination angle of 60° outwardly in a radial direction of the tire with respect to a line segment drawn from the curvature center in parallel to a rotating axial line of the tire toward the inside of the tire. Though not specifically detailed, the existence between the

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line segments when the tire is inflated under a pressure corresponding to 15% of a maximum pressure is inherent due to the height of the rubber protection sheet. The height of the rubber protection sheet is such that the apex would necessarily be above the specified line segment.

With respect to claim 4, it can be seen from Figure 1 that the rubber protection is existent between line segments in parallel to the rotating axial line of the tire respectively passing through an outer end of the bead filler rubber in the radial direction of the tire an inner end of the rubber reinforcing layer in the radial direction of the tire.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Deck et al. Deck et al. teach the manufacture of a safety tire in accordance to the design specifications outlined in the 102 rejection above. The reference does not specifically address the existence of the rubber protection sheet between two specified line segments when the tire is mounted onto a recommended rim and inflated under a pressure corresponding to 15% of a maximum air pressure. It would have been obvious to one of ordinary skill in the art at the time of the invention to design the tire such that the rubber protection sheet was existent between two specified line segments.

It is apparent from Figure 1 that the rubber protection sheet is existent over both sides of a straight line drawn from a curvature center of a flange at an inclination angle of 60° outwardly in a radial direction of the tire with respect to a line segment drawn from the curvature center in parallel to a rotating axial line of the tire toward the inside of the tire. However, it is the examiner's position that this design illustrates the tire dimensions in a fully inflated state. In this illustration, the straight line intersects the rubber protection sheet in the extreme lower portion. In a partially inflated state, the rubber protection sheet would, if anything, have a reduced height. Based on the height of the rubber protection sheet, there is no reason to believe that the upper portion of the rubber protection sheet would fall below the line segment when the tire is inflated under a pressure corresponding to 15% of a maximum pressure.

5. Claims 6 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Deck et al and further in view of Ghilardi (EPO 0542252 A1). Deck et al. teach the manufacture of a safety tire that incorporates the design characteristics outlined in the 102 rejection above. The reference does not specifically disclose the relationship of the 50 % modulus between the rubber protection sheet and the rubber reinforcing layer and fails to mention the loss tangent ($\tan \delta$) of the rubber protection sheet. Ghilardi describes the manufacture of a tire that incorporates a series of rubber reinforcement layers, such that low hysteresis loss is obtained through the use of an elastomeric material with a loss tangent below 0.1. It would have been obvious to one of ordinary skill in the art at the time of the invention to design the rubber protection sheet such that the 50% modulus is 0.3-0.84 times that of the rubber reinforcing layer and the loss

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tangent is between 0.04 and 0.11, as taught by Ghilardi, in the tire construction previously defined by Deck et al.

With respect to claim 6, Deck et al. suggest various ranges for the moduli of elasticity at **100% elongation** for each rubber component. In Column 1, Lines 51-60, the reference teaches that the rubber protection sheet should have a modulus of elasticity that is no greater than 80 bars and that the rubber reinforcing layer should have a modulus of elasticity between 70 and 100 bars. One of ordinary skill in the art at the time of the invention would have recognized the selection of various combinations of rubber components such that the modulus of elasticity of the rubber protection sheet at **100% elongation** would be between 0.3 and 0.84 times that of the rubber reinforcing layer absent any unexpected results. It is further noted that applicant has chosen to define the rubber components in terms of a **50% modulus**. This rubber property is not commonly used in the tire industry and the relationship between the 100 % and 50 % moduli is not directly specified in the specification or common literature. It is the examiner's belief that the ratio of moduli at **100 % elongation**, as suggested by Deck et al., would correlate to a ratio of moduli at **50 % elongation** that is within the range of the claimed invention. As a result, the selection of rubber components such that the 50 % modulus of the rubber protection sheet is between 0.3 and 0.84 times that of the rubber reinforcing layer would be appreciated by one of ordinary skill absent any unexpected results.

Regarding claim 7, Deck et al. does not specify the loss tangent ($\tan \delta$) property of the rubber in the rubber protection sheet. The reference does indicate, however, that

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the rubber in the reinforcing layer should have properties that promote low hysteresis loss (Column 1, Lines 66+). Though not specified in this reference, one skilled in art at the time of the invention would have appreciated the selection of an elastomeric material for the rubber protection sheet that displayed similar properties. The reduction in hysteresis loss is a desired property to reduce rolling resistance. Furthermore, it is well understood in the tire industry that low hysteresis loss is obtained by selecting an elastomeric material with a low loss tangent. As described in Ghiraldi, low hysteresis loss can be interpreted as a loss tangent that is less than 0.1 (Column 3, Lines 19-23). One of ordinary skill in the art at the time of the invention would have appreciated the selection of an elastomeric material for a rubber protection sheet with a loss tangent between 0.04 and 0.11 to reduce hysteresis loss.

6. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Deck et al. As described in the rejections above, the reference suggests the design of a safety tire in accordance to the specifications outlined in claim 1. The reference does not specifically define the thickness of the rubber protection sheet. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a rubber protection sheet that had a thickness in the range of 0.4 and 4.0 millimeters.

Deck et al. does not provide a numerical value for the thickness of either the rubber reinforcing layer or the rubber protection sheet. The reference does suggest that the ratios of these thicknesses can vary as a function of the flexibility of the elastomers that are used for these two components (Column 2, Lines 5-12). Furthermore, the reference contains a specific example where the rubber protection sheet has a


thickness that is one fourth that of the rubber reinforcing layer (Column 3, Lines 10-15). Based on these teachings, it is the examiner's belief that the specific thickness of the rubber protection sheet is not as important as the ratio of the thickness between the rubber protection sheet and the rubber reinforcing layer. Therefore, absent any unexpected results, one skilled in the art at the time of the invention would have appreciated the selection of a rubber protection sheet with a thickness that ranged between 0.04 and 4.0 millimeters. The selection of such a rubber protection sheet would have provided protection while the tire was in an uninflated state and maintained a low overall weight for the tire.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer
April 18, 2001


Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700